

What is claimed is:

1. A sustained-release pharmaceutical composition comprising metformin or a pharmaceutically acceptable salt thereof in an amount of about 100 mg to about 1000 mg; and a
5 sustained-release delivery system comprising xanthan gum in an amount of about 5% to about 60% by weight; locust bean gum in an amount of about 10% to about 70% by weight; and at least one pharmaceutical diluent in an amount of about 5% to about 80% by weight.
2. The sustained-release pharmaceutical composition of claim 1, wherein the metformin or the pharmaceutically acceptable salt thereof is present in an amount of about 300
10 mg to about 700 mg; and the sustained-release delivery system comprises xanthan gum in an amount of about 20% to about 40% by weight; locust bean gum in an amount of about 20% to about 60% by weight; and at least one pharmaceutical diluent in an amount of about 10% to about 50% by weight.
3. The sustained-release pharmaceutical composition of claim 1, wherein the
15 metformin or the pharmaceutically acceptable salt thereof is present in an amount of about 500 mg; and the sustained-release delivery system comprises xanthan gum in an amount of about 28% by weight; locust bean gum in an amount of about 42% by weight; and at least one pharmaceutical diluent in an amount of about 20% by weight.
4. The sustained-release pharmaceutical composition of claim 1, wherein the
20 sustained-release delivery system further comprises calcium sulfate in an amount of about 0.5% to about 30% by weight.
5. The sustained-release pharmaceutical composition of claim 2, wherein the sustained-release delivery system further comprises calcium sulfate in an amount of about 5% to about 20% by weight.
- 25 6. The sustained-release pharmaceutical composition of claim 3, wherein the sustained-release delivery system further comprises calcium sulfate in an amount of about 10% by weight.
7. The sustained-release pharmaceutical composition of claim 1, wherein the pharmaceutical diluent is mannitol.

8. The sustained-release pharmaceutical composition of claim 1, wherein the sustained release delivery system further comprises ethylcellulose in an amount of about 2% to about 10% by weight.

9. The sustained-release pharmaceutical composition of claim 1, wherein the sustained-release delivery system further comprises ethylcellulose in an amount of about 3% to about 7% by weight.

10. The sustained-release pharmaceutical composition of claim 1, further comprising a coating on the outside of the pharmaceutical composition, wherein the coating comprises an alkyl cellulose, a hydrophobic cellulosic compound, a polyvinyl acetate polymer, a polymer or copolymer derived from an acrylic acid ester and/or a methacrylic acid ester, a zein, a wax, a shellac, a hydrogenated vegetable oil or a mixture of two or more thereof.

11. The sustained-release pharmaceutical composition of claim 10, wherein the coating comprises ethyl cellulose to a weight gain of about 1% to about 20% by weight.

12. A method of treating diabetes in a patient in need thereof comprising administering the sustained-release pharmaceutical composition of claim 1.

13. A sustained-release pharmaceutical composition comprising metformin or a pharmaceutically acceptable salt thereof; and a sustained release delivery system which comprises a hydrophilic compound selected from xanthan gum, deacylated xanthan gum, a carboxymethyl ester of xanthan gum, a propylene glycol ester of xanthan gum, tragacanth, pectin, acacia, karaya, alginate, agar, carrageenan, gellan gum, or a mixture of two or more thereof; a homopolysaccharide compound selected from guar gum, hydroxypropyl guar gum, locust bean gum, and a mixture of two or more thereof; and one or more pharmaceutical diluents.

14. The sustained-release pharmaceutical composition of claim 13, wherein the one or more pharmaceutical diluents are selected from starch, lactose, dextrose, mannitol, sucrose, microcrystalline cellulose, sorbitol, xylitol, fructose, or a mixture of two or more thereof.

15. The sustained-release pharmaceutical composition of claim 13, wherein the sustained-release delivery system further comprises calcium sulfate, sodium chloride, potassium sulfate, sodium carbonate, lithium chloride, tripotassium phosphate, sodium borate, potassium bromide, potassium fluoride, sodium bicarbonate, calcium chloride, magnesium chloride, sodium

citrate, sodium acetate, calcium lactate, magnesium sulfate, sodium fluoride, or a mixture of two or more thereof.

16. The sustained-release pharmaceutical composition of claim 13, wherein the sustained-release delivery system further comprising an alkyl cellulose, a hydrophobic cellulosic compound, a polyvinyl acetate polymer, a polymer or copolymer derived from an acrylic acid ester and/or a methacrylic acid ester, a zein, a wax, a shellac, a hydrogenated vegetable oil or a mixture of two or more thereof.

17. The sustained-release pharmaceutical composition of claim 13, wherein the weight ratio of metformin or the pharmaceutically acceptable salt thereof to the hydrophilic compound and homopolysaccharide compound is about 1:01 to about 1:2.

18. The sustained-release pharmaceutical composition of claim 13, wherein the weight ratio of metformin or the pharmaceutically acceptable salt thereof to the hydrophilic compound and homopolysaccharide compound is about 1:03 to about 1:1.

19. The sustained-release pharmaceutical composition of claim 13, further comprising a coating which comprises a hydrophobic polymer.

20. A method for treating diabetes in a patient in need thereof comprising administering a therapeutically effective amount of a sustained-release pharmaceutical composition of claim 13.

21. A sustained-release pharmaceutical composition comprising metformin or a pharmaceutically acceptable salt thereof; and a sustained release delivery system comprising at least one hydrophilic compound, at least one cross-linking agent, and at least one pharmaceutical diluent; wherein the weight ratio of metformin or the pharmaceutically acceptable salt thereof to the hydrophilic compound and cross-linking agent is from about 1:0.2 to about 1:1.5; and wherein the weight ratio of pharmaceutical diluent to hydrophilic compound is from about 1:4 to about 4:1.

22. The sustained-release pharmaceutical composition of claim 21, wherein the sustained-release delivery system further comprises at least one cationic cross-linking compound, and wherein the weight ratio of hydrophilic compound to cationic cross-linking compound is from about 1:4 to about 4:1.

23. A method for treating diabetes in a patient in need thereof comprising administering a therapeutically effective amount of the sustained-release pharmaceutical composition of claim 21.